



PATENT LAID-OPEN (A)

No. Sho 51-124578

October 30, 1976

Application No.:	Sho 50-48628
Filing Date:	April 23, 1975
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Inventor:	Ryuichi Endo
Int. Cl ² :	C 05 D 1/00
	A 01 N 7/02

SPECIFICATION

1. Title of the Invention

Aqueous solution-form soil conditioning fertilizer

2. Claim

An aqueous solution-form soil conditioning fertilizer comprising an acrylamide-potassium acrylate copolymer.

3. Detailed Description of the Invention

The present invention relates to an aqueous solution-form soil conditioning fertilizer which imparts to soil excellent water-resistant aggregation ability and water permeability as well as water retention property and, further which is useful mainly as a fertilizer having a delayed action with respect to nitrogen and potassium.

Conventionally, as a soil conditioning agent, synthetic polymers, such as polyvinyl alcohol, polysodium acrylate, polyacrylamide, and derivatives thereof, have been known. However, in many cases, these polymers have a problem in that the resultant water-resistant aggregates

cannot be stably maintained.

A task of the present invention is to solve the above-mentioned problem and to provide a soil conditioning fertilizer which is useful as a fertilizer having a delayed action.

The present inventor has made studies and, as a result, it has been found that the above task is achieved by an aqueous solution-form fertilizer comprised mainly of an acrylamide-potassium acrylate copolymer obtained by neutralizing a copolymer of acrylamide and acrylic acid by potassium hydroxide.

In the present invention, the acrylamide unit content of the acrylamide-acrylic acid copolymer can be appropriately changed if desired, but, from a practical point of view, it is preferred that the acrylamide unit content falls in the range of from 70 to 50 % by mole. The amount of potassium incorporated into the copolymer by the neutralization of the copolymer by potassium hydroxide can be appropriately changed, if desired, depending on the acrylic acid unit content of the copolymer.

In the present invention, it is preferred that the acrylamide-potassium acrylate copolymer is used in an amount of about 0.001 to 0.05 % by weight, based on the weight of soil, but, if desired, the copolymer may be used in a larger amount or in a smaller amount.

The concentration of the aqueous solution-form fertilizer of the present invention can be appropriately changed, but it is preferred that the fertilizer is diluted

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added to the resultant clay soil to effect aggr gation, and the resultant soil and the above clay soil containing no aqueous copolymer solution were placed on a filt r paper and observed while comparing them. As a result, the soil containing no aqueous copolymer solution required a long time for dehydration and thus exhibited poor swab, whereas the soil containing the aqueous copolymer solution was easily dehydrated.

As is apparent from the above, the aqueous solution-form soil conditioning fertilizer of the present invention is advantageous not only in that it exhibits excellent aggregation effect and excellent water retention property as well as excellent water permeability, but also in that it has a property such that potassium contained in the copolymer and nitrogen (N) in the amide group gradually act as a fertilizer moiety.



Amendment

January 27, 1977

Ishiro Katayama, Commissioner, Patent Office, Esq.

1. Indication of the Case
Japanese Patent Publication No. Sho 50-48628
2. Title of the Invention
Aqueous solution-form soil conditioning fertilizer
3. Person amending
Name: Ryuichi Endo
4. Subject to be amended
Column of Detailed Description of the Invention in the specification
5. Content of Amendment
Add the following amendment to the specification.
 - 1) Insert the following after the last line of page 5 of the publication.
"Germination examination"
 1. Purpose of examination
The effect of the acrylamide-potassium acrylate copolymer on the germination of pakchoi is examined.
 2. Examination method
 - a) A test liquid composite fertilizer and a control liquid composite fertilizer are as follows.

The control liquid composite fertilizer comprises 30 parts by weight of $(\text{NH}_2)_2\text{CO}$, 15 parts by weight of K_2HPO_4 ,

0.01 part by weight of $K_2B_2O_5$, and 54 parts by weight of water. 1 Part by weight of an acrylamide-potassium acrylate copolymer was added to the contr 1 liquid composite fertilizer, and the resultant mixture was examined as a test liquid composite fertilizer. Analysis results with respect to N, P_2O_5 , and K_2O contained in each fertilizer are as follows.

	N	P_2O_5	K_2O
Test liquid composite fertilizer	13.30	7.44	6.80
Control liquid composite fertilizer	13.3	7.4	6.8

b) Test soil and plant

Humus volcanic ash soil (Suginami, Tokyo)

Pakchoi: 25 seeds/pot

400 g of the test soil was placed in a Neubauer pot, and the test fertilizer and the control fertilizer were individually mixed well with the entire soil, and then the soil moisture content of each soil was adjusted so that it became about 70 % of the maximum moisture capacity of each soil. The seeds were sowed in each soil and the germination and the growing state after germination were inspected.

3) Section for test and amount of fertilizer applied

Section	N mg				
Test liquid composite fertilizer	200	300	400	500	
Control liquid composite fertilizer	200	300	400	500	
No fertilizer					0

4) Summary of cultivation

